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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,888	01/04/2007	Rolando Pajon Feyt	976-33 PCT/US	5857

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EXAMINER	
OGUNBIYI, OLUWATOSIN A	
ART UNIT	PAPER NUMBER
1645	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,888	FEYT ET AL.	
	Examiner	Art Unit	
	OLUWATOSIN OGUNBIYI	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/8/08*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *32-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *32-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/2/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

RESPONSE TO AMENDMENT

The amendment filed 5/8/08 has been entered into the record. Claims 1-31 and 46 have been cancelled. Claims 32-45 are pending. Claims 32-45 are under examination.

The text of Title 35 of the U.S. Code not reiterated herein can be found in the previous office action.

Drawings

The objection to the drawings is withdrawn. Acknowledgment is made of submission of new corrected drawings.

Specification

The objection to the specification is withdrawn. Acknowledgment is made of the amendments made to the specification.

Information Disclosure Statement

The information disclosure statement filed 6/2/08 has been considered. An initialed copy is enclosed.

Rejections Withdrawn

The rejection of claims 32-45 under 35 U.S.C. 101 because the claimed invention is not supported by either a credible asserted utility or a well established utility is withdrawn in view of the amendment to the claims.

The rejection of claims 32-45 under 35 U.S.C. 112, first paragraph is withdrawn in view of the amendment to the claims.

The rejection of claim 46 under 35 U.S.C. 112, first paragraph, is withdrawn in view of the cancellation of the claim.

The rejection of claim 46 under 35 U.S.C. 102(b) as being anticipated by Fraser et al. WO 99/57280, November 1999 is withdrawn in view of the cancellation of the claim.

Rejections Maintained

The rejection of claims 32-36, 39-40, and 42-45 under 35 U.S.C. 102(b) as being anticipated by Fraser et al. WO 99/57280, November 1999 is maintained.

The claims are drawn to a method of inducing an immune response against an infection caused by bacteria from a *Neisseria* genus in a human in need thereof comprising administering to the human an effective amount of a recombinant protein comprising an amino acid sequence set forth in SEQ ID NO: 4.

Fraser teaches a method of treating an infection due to *Neisseria* bacteria (p. 7 4th full paragraph) in a human (p. 34 2nd full paragraph) by administering to said human an effective amount (p. 36 2nd full paragraph) of immunogenic compositions comprising a protein comprising an amino acid sequence that is 100% identical to SEQ ID NO: 4, thus inducing an immune response to said *Neisseria* bacteria (See p. 32 last paragraph, p. 34 under vaccines). See sequence alignment (provided in previous office action dated 10/31/07) and SEQ ID NO: 1522 on p. 798 of Fraser et al.

Fraser et al teaches said method wherein the bacteria are *Neisseria meningitidis* and wherein the bacteria are *Neisseria gonorrhoeae*. Fraser et al teaches said method comprising administering pharmaceutical compositions of said protein and a pharmaceutically acceptable

carrier (p. 34 see under vaccines) wherein said pharmaceutical composition further comprises a polysaccharide antigen (p. 33 4th full paragraph); wherein said composition further comprises inactivated virus particles (inactivated microorganism, p. 33 4th full paragraph); wherein in said pharmaceutical composition further comprises a peptide antigen (p. 35 last paragraph); wherein in said pharmaceutical composition further comprises macrophage colony stimulating factor (growth factor, p. 35 2nd full paragraph); wherein said pharmaceutical composition is administered parenterally (p. 36 2nd to the last paragraph) and wherein said pharmaceutical composition is administered mucosally (via oral route, p. 36 2nd to the last paragraph).

Applicants' arguments and the response.

Applicant argues that Fraser does not disclose a method of inducing an immune response against an infection caused by bacteria from a *Neisseria* genus in a human in need thereof, which includes administering a protein comprising the sequence of SEQ ID NO:4.

Applicants' argument is carefully considered but is not found persuasive.

The instantly claimed method steps for inducing an immune response comprises administering a protein comprising the sequence of SEQ ID NO:4 to a human in need thereof. Fraser et al teaches administration of effective amounts to a human in need thereof, immunogenic compositions comprising the instant protein to treat infection caused by a bacteria from a *Neisseria* genus (see supra). Administering an immunogenic antigen to a subject to treat an infection is a method of inducing an immune response against said infection. Fraser et al teach the same method steps as recited by the instant claims thus, the method of Fraser is therefore drawn to induction of an immune response against an infection caused bacteria from a *Neisseria* genus to treat said infection.

New Rejections Based on Amendment

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 32 and 35-45 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of inducing an immune response against an infection caused by *Neisseria meningitidis* or *Neisseria gonorrhoeae* in a human in need thereof by administering SEQ ID NO: 4, does not reasonably provide enablement for inducing an immune response against other *Neisseria* species of the *Neisseria* genus. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The nature of the invention is inducing an immune response against an infection caused by any bacteria from a *Neisseria* genus. The invention is to be practiced in humans by administering an effective amount of a single recombinant protein comprising an amino acid sequence set forth in SEQ ID NO: 4. The scope of *Neisseria* genus is extremely broad and comprises some of the following species *meningitidis, lactamica, cinerea, gonorrhoeae, flava, elongata* (Stern et al. US 5378606, 1995. See under description. Cited previous action) and *sicca, subflava, mucosa, dentirificans*. The nature of the invention is highly complex as it involves induction of an immune response by a single protein antigen against any *Neisseria* species.

The specification teaches that protein NMB0928 (SEQ ID NO:4) is a *Neisseria meningitidis* serogroup B protein with 96% sequence identity with a protein from *Neisseria*

gonorrhoeae (p. 16 example 5 and fig. 8). The specification is silent as to whether SEQ ID NO: 4 shares sequence identity with proteins from other *Neisseria* species. The specification teaches that SEQ ID NO: 4 induce an immune response when administered to mice (p. 17 example 6). The specification also teaches that immune sera obtained from said immunized mice reduced bacterial counts in rats challenged with bacteria (strain CU385) one hour after administering said sera (p.17 example 7, and see figure 10). The specification does not teach whether said immune sera reduces bacterial counts in rats challenged with any of the other *Neisseria* species as listed above.

The specification does not teach the immunogenic epitope(s) of SEQ ID NO: 4 and whether these epitope(s) are present in the *Neisseria* species such as *lactamica, cinerea, flava and elongata*. The specification does not correlate any immunogenic epitopes of SEQ ID NO: 4 with induction of an immune response to non-pathogenic *Neisseria* species such as *lactamica, cinerea, flava, elongata, sicca, subflava, mucosa, dentirificans* in a human in need thereof.

In view of the above considerations, undue experimentation would be required of the skilled artisan to induce an immune response against an infection caused by other *Neisseria* species, apart from *meningitidis* and *gonorrhoeae*, as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 32-40 and 42-45 are rejected under 35 U.S.C. 103 as being unpatentable over Fraser et al. WO 99/57280, November 1999 in view of Tai et al (WO 97/28273) Aug. 1997.

The claims are drawn to a method of inducing an immune response against an infection caused by bacteria from a *Neisseria* genus in a human in need thereof comprising administering to the human an effective amount of a recombinant protein comprising an amino acid sequence set forth in SEQ ID NO: 4.

Fraser teaches a method of treating an infection due to *Neisseria* bacteria such (p. 7 4th full paragraph) in a human (p. 34 2nd full paragraph) by administering to said human an effective amount (p. 36 2nd full paragraph) of immunogenic compositions comprising a protein comprising an amino acid sequence that is 100% identical to SEQ ID NO: 4, thus inducing an immune response to said *Neisseria* bacteria (see p. 32 last paragraph, p. 34 under vaccines). See sequence alignment (provided in previous office action dated 10/31/07) and SEQ ID NO: 1522 on p. 798 of Fraser et al.

Fraser et al teaches said method wherein the bacteria are *Neisseria meningitidis* and wherein the bacteria are *Neisseria gonorrhoeae*. Fraser et al teaches said method comprising administering pharmaceutical compositions of said protein and a pharmaceutically acceptable carrier (p. 34 see under vaccines) wherein said pharmaceutical composition further comprises a polysaccharide antigen (p. 33 4th full paragraph); wherein said composition further comprises inactivated virus particles (inactivated microorganism, p. 33 4th full paragraph); wherein in said pharmaceutical composition further comprises a peptide antigen (p. 35 last paragraph); wherein

in said pharmaceutical composition further comprises macrophage colony stimulating factor (growth factor, p. 35 2nd full paragraph); wherein said pharmaceutical composition is administered parenterally (p. 36 2nd to the last paragraph) and wherein said pharmaceutical composition is administered mucosally (via oral route, p. 36 2nd to the last paragraph).

Fraser et al does not teach that the polysaccharide antigen is a capsular polysaccharide of *N. meningitidis* and does not teach that said pharmaceutical composition further comprises a bacterial polysaccharide-protein conjugate wherein said protein comprises an amino acid sequence set forth in SEQ ID NO: 4.

Tai et al teaches the use of a composition comprising *N. meningitidis* polysaccharide-*N. meningitidis* protein conjugate to induce an immune response against *Neisseria meningitidis* (See *N. meningitidis* group B polysaccharide conjugated to PorB protein of group B *meningitidis,* p. 32 lines 15-25). Tai et al teach that the T-cell independent quality of polysaccharide antigens in infants can be overcome by conjugating the polysaccharide to a protein carrier (p. 9 lines 8-10). Tai et al teaches the use of *N. meningitidis* proteins as carriers.

It would have been prima facie obvious to one of ordinary skill in the art at the time the instant invention was made to conjugate the protein of Fraser et al to a *N. meningitidis* capsular polysaccharide because Tai et al teaches the use of *N. meningitidis* proteins as carriers in order to overcome the T cell independent quality of polysaccharide antigens in infants.

As to claim 38, it would be prima facie obvious to one of ordinary skill in the art at the time the instant invention was made to combine said composition of Fraser et al and said protein- polysaccharide conjugate because both compositions are used for inducing an immune response against *N. meningitidis* infection. It is prima facie obvious to combine two (or more)

compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the very same purpose.... [T]he idea of combining them flows logically from their having been individually taught in the prior art." *In re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Claims 32-36 and 39-45 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Fraser et al. WO 99/57280, November 1999 in view of Meinke et al, WO 02/059148, Aug. 1 2002.

Fraser teaches a method of treating an infection due to *Neisseria* bacteria such (p. 7 4th full paragraph) in a human (p. 34 2nd full paragraph) by administering to said human an effective amount (p. 36 2nd full paragraph) of immunogenic compositions comprising a protein comprising an amino acid sequence that is 100% identical to SEQ ID NO: 4, thus inducing an immune response to said *Neisseria* bacteria (See p. 32 last paragraph, p. 34 under vaccines). See sequence alignment (provided in previous office action dated 10/31/07) and SEQ ID NO: 1522 on p. 798 of Fraser et al.

Fraser et al teaches said method wherein the bacteria are *Neisseria meningitidis* and wherein the bacteria are *Neisseria gonorrhoeae*. Fraser et al teaches said method comprising administering pharmaceutical compositions of said protein and a pharmaceutically acceptable carrier (p. 34 see under vaccines) wherein said pharmaceutical composition further comprises a polysaccharide antigen (p. 33 4th full paragraph); wherein said composition further comprises inactivated virus particles (inactivated microorganism, p. 33 4th full paragraph); wherein in said

pharmaceutical composition further comprises a peptide antigen (p. 35 last paragraph); wherein in said pharmaceutical composition further comprises macrophage colony stimulating factor (growth factor, p. 35 2nd full paragraph); wherein said pharmaceutical composition is administered parenterally (p. 36 2nd to the last paragraph) and wherein said pharmaceutical composition is administered mucosally (via oral route, p. 36 2nd to the last paragraph).

Fraser does not teach that said pharmaceutical composition further comprises a hormone.

Meinke teach an immunostimulatory compound for further stimulating the immune response to an antigen. Meinke teach an example of said immunostimulatory compounds such as a neuroactive compounds, especially human growth hormone (page 12 first incomplete paragraph).

It would have been prima facie obvious to one of ordinary skill in the art at the time the instant invention was made to include in the composition of Fraser et al an immunostimulatory substance such a human growth hormone because Meinke et al teach that said hormone is used for further stimulating an immune response (i.e. an adjuvant) to an antigen.

Status of Claims

Claims 32-45 are rejected. No claims allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oluwatosin Ogunbiyi whose telephone number is 571-272-9939. The examiner can generally be reached on M-F 8:30 am - 5:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Shanon Foley can be reached on 571-272-0898.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Oluwatosin Ogunbiyi
Examiner, Art Unit 1645

/Robert A. Zeman/

for Oluwatosin Ogunbiyi, Examiner of Art Unit 1645